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ABSTRACT

A study involving 234 Texas college students was undertaken to develop and test the validity and reliability of an instrument designed to measure college students' attitudes toward alcohol. Special attention was given to the content and construct validity of the instrument. Subjects ranged in age from 18 to 24 years. The mapping sentence served as a template for the development of attitude items and as the source of the regional hypotheses. The major hypotheses suggested that there were four basic facets underlying attitudes toward alcohol. Gamma coefficients of monotonicity were computed to estimate the pairwise associations among all the attitude items separately for each form of the instrument. This analysis resulted in two square symmetric proximity matrices. Each matrix was submitted to the ALSCAL procedure of the Statistical Analysis System software package for classical non-metric multidimensional scaling analysis. Results indicate that the facet approach to attitudes research forces the researcher to systematize the process of instrument development and item writing. Mapping sentences have also shown advantages in the area of generating items, primarily in the context of criterion-referenced achievement testing. The Alcohol Survey is provided. (TJH)

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A FACET ANALYSIS APPROACH TO CONTENT AND CONSTRUCT VALIDITY

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A Facet Analysis Approach to Content and Construct Validity

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Louis Guttman is generally considered to be the originator of the basic approach known today as facet theory. The facet approach gradually developed as the culmination of Guttman's ideas about theory construction, empirical research, and data analysis in the social sciences. Although facet theory has enjoyed considerable acceptance and success in limited circles, mostly abroad in Israel, Europe, and the United Kingdom, the approach is still largely unknown and not widely applied in the United States. One reason has been the lack of availability of a definitive, comprehensive exposition of the theory, which Guttman was preparing at the time of his death. For the interested reader, several books by students and colleagues of Guttman have appeared that develop the basic principles of facet theory and/or provide applications (Canter, 1985; Shye, 1978, 1985; and Tziner, 1987).

It is beyond the scope of the present paper to attempt a thorough treatment of facet theory, but important aspects of the approach will be discussed. Also, due to the focus of the paper, the application of facet theory to address content and construct validity issues will be described. The specific context of the application is the development and tryout of a new instrument to measure the attitudes of college students toward alcohol.

A review of the literature revealed that, for the most part, existing alcohol education programs or instructional interventions have failed to change students' attitudes or behaviors related to alcohol consumption (Moskowitz, 1983). Many reasons have been put forth to account for these failures, including lack of a proper theoretical basis for the interventions, poor program implementation methodologies, and the use of inappropriate or inadequate measurement techniques (McCarty, Morrison, & Mills, 1983; Torabi & Veenker, 1986). Regarding this last reason, although self-report instruments are usually necessary for measuring attitudes toward alcohol, few

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studies have paid much attention to or reported information about the psychometric properties of the instruments employed. Thus the argument has been made that many of the educational programs or interventions designed to change attitudes or behaviors related to alcohol consumption might actually have been effective to varying degrees, but poor instrumentation precluded such findings.

In general, the development of reliable and valid measures of attitudes toward alcohol use among college students has received little attention in the alcohol/drug education literature, regardless of theoretical approach. Even less attention has been directed toward attempts to identify the underlying, perhaps multidimensional, structure of those attitudes. While most published reports have focused upon theoretical bases, program content, or evaluation results, there is a paucity of research on efforts to assess the psychometric properties of the instrumentation used to measure attitudes toward alcohol among the college population. Yet, as noted above, inadequate instrumentation has been mentioned as one of several methodological weaknesses in alcohol education programs and as a potential contributor to the inconsistent findings concerning program effects

Thus, the major purposes of the present research were to develop and try out an instrument designed to measure college students' attitudes toward alcohol. Not only were efforts made to estimate the reliability of the resulting instrument, but special attention was focused on its content and construct validity. Guttman's facet theory approach was seen as being valuable for use in these efforts because it provided the tools for the systematic, effective generation of items, for making regional hypotheses about the underlying structure of the content domain, and for testing these hypotheses via nonmetric data analysis procedures.

Facet Theory

Facet theory (Canter, 1985; Dancer, 1986; Guttman, 1954, 1957) provides a general approach to the study of cognitive, instrumental, and affective behavior. The facet theory approach in itself is content free and is potentially applicable to any content domain. In the present context of affective behavior, it will be seen that the approach incorporates a straightforward procedure for generating the items to be included on an attitude measurement instrument. In contrast to the intuitive, subjective procedures often used to develop the items on such instruments, item

construction based on facet theory is systematic, logical, and focuses directly on content validity.

The facet theory method begins by defining a specific content domain (e.g., a construct) from a universe of interest and by hypothesizing **facets** that underlie the domain. Facets may be thought of as separate concepts, components, or aspects of the variables (in the present context, the variables would be the items on an attitude instrument) that are to be used empirically to measure the content domain. According to Dancer (1989, p. 3), facets are "semantic or perceptual properties...that characterize basic components of the variables." The collection of all such facets defines the content domain. So we have a logical system in which the set of items is represented in terms of a more fundamental set of facets which, in turn, make up the content domain..

Next, a set of **elements** (or categories) is postulated as making up each facet. The elements of a facet depict underlying conceptual and semantic categories of the variables of interest to an investigation. It is usually helpful if these elements are mutually exclusive and jointly exhaustive. That is, any particular variable (item) should be able to be classified unambiguously into one and only one element of each of the facets, and the set of elements within a facet should span it entirely.

Then, hypotheses are made about the internal structure of the variables within the specific content domain. Given the classifications of the variables into the elements, the facets hypothesized to underlie the variables and their interrelations are made explicit through a **mapping sentence**. Each mapping sentence is based on the assumption that the variables from a given domain are composed of interrelated facets. According to Guttman (1954), the fundamental components of the mapping sentence for a research design include a specification of the following: 1) the constructs belonging to a content universe; 2) interrelationships among those constructs, expressed through grammatical phrases; and 3) the common range of responses for the empirically observed variables in the study.

Furthermore, the mapping sentence in a narrow sense operationalizes Guttman's statement that a theory is an "hypothesis of a correspondence between a definitional system for a universe of observations and an aspect of the empirical structure of those observations, together with a rationale for such an hypothesis" (Guttman, 1981, p.50). That is, the mapping sentence

provides the definitional framework for positing hypotheses about the relationships among the facets, associations among their elements, and the resulting internal structure of the observed data collected on the variables.

In empirical research, facets have been found to play three major roles in partitioning a multidimensional solution space into meaningful, interpretable regions (Levy, 1981). These roles have been called axial, modular, and polar. An **axial** role is played by a facet whose elements are ordered but the ordering of the elements is uncorrelated with the ordering of the elements of other facets. An axial facet slices a space into planar sections. A **modular** facet also consists of ordered elements, but it may be related to other facets. Modular facets divide the space into concentric circles. A **polar** role is played by a facet having unordered elements. Polar facets may also be related to other facets, and they result in "pie slice" wedges emanating from a common origin (or pole). A fourth role that is found occasionally occurs when an ordered facet plays a **joint** role with another ordered facet. An example of this case would be the situation in which the elements of two "axial-like" facets were correlated to some degree.

To summarize, facet theory provides a mechanism for formulating regional hypotheses whereby basic components of the variables to be analyzed are identified (facets), categories (elements) of the facets are specified, and predictions are made *a priori* about: (a) the roles that the facets will play, (b) the relations among the facets, (c) the relations among the elements within the facets, and (d) the locations of the variables in the multidimensional solution space. Tests of these hypotheses produce results that have implications for the underlying structure of the content domain being investigated.

The analytic procedure routinely used by Guttman for implementing the facet theory approach was smallest space analysis (SSA), a nonmetric multidimensional scaling (MDS) method (Guttman, 1968; Kruskal and Wish, 1978; Young and Hamer, 1987). The analysis starts by constructing a matrix of proximities among the variables computed from the pairwise associations observed in the empirical data. Guttman preferred to use monotonicity coefficients for this purpose to avoid the stronger assumptions required for the linear Pearson correlation coefficients. The result of the SSA procedure was a set of coordinates that located the variables in some multidimensional

space. The extent to which the variables were located in discernible regions of the solution space, as predicted by the hypotheses generated from the mapping sentence, provided an empirical test of the adequacy of the particular mapping sentence employed. The usefulness of the mapping sentence, in turn, was indicated by the degree to which the empirical multidimensional scaling analysis of the data supported the structural hypotheses that had been formulated *a priori* about the common conceptual components of the variables.

Content and Construct Validity

Although Guttman typically reanalyzed existing datasets via the facet theory approach, there is nothing about the method to preclude its being applied in the development of new measurement instruments. On the contrary, one might argue that the facet theory approach inherently addresses the issues of content and construct validity in such applications.

First, in regard to content validity, the description of facet theory provided above indicates that the researcher must clearly define the content domain or construct to be measured. Also, the facets that underlie the domain must be specified and the elements that make up each facet have to be identified. Thus a template, or pattern, for item writing has been prescribed which has obvious implications for the content validity of the resulting instrument. Second, with respect to construct validity, the reader will recall that hypotheses must be specified *a priori* as to the internal structure of the variables (items) that make up the instrument. These hypotheses are made in terms of the anticipated interrelationships among the facets and their elements. In turn, these interrelationships determine how the solution space will be partitioned into potentially meaningful regions. Finally, the hypotheses are tested for evidence of confirmation by means of the multidimensional scaling analysis which locates each of the variables as a point in the solution space. Thus a means for the assessment of the construct validity of the instrument has also been provided.

METHOD

Instrument Development

For this investigation, the mapping sentence served as a template for the development of attitude items and as the source of the regional

hypotheses. The facets identified in the mapping sentence represented conceptual aspects of variables previously reported in the substance abuse prevention literature which were of interest to the study. The attitude items were developed from combinations of the elements of each facet, so that each element was represented proportionately among the items. The mapping sentence used in the study was as follows:

"The attitude of student (x)

Facet A — Facet B

concerning the { a1. damage / a2. utility } to { b1. physical health / b2. mental health / b3. social life }

Facet C — Facet D

from the use of alcohol when used { c1. daily / c2. weekly / c3. monthly } in a { d1. light / d2. moderate / d3. heavy } fashion

to meet a need ⟹ { very positive / to / very negative } attitude toward the use of alcohol."

As can be seen in the mapping sentence, there are four facets proposed as underlying attitudes toward alcohol: Facet A -- Outcome, Facet B -- Areas of Life, Facet C -- Frequency of Use, and Facet D -- Quantity. The elements hypothesized to make up each of these facets are shown in the mapping sentence.

The instrument developed for the present investigation consisted of attitude items written based upon the structuples from the mapping sentence. A **structuple** was created by combining four elements, one element taken from each facet. Therefore, a total of 54 structuples were formed as a result of the Cartesian product of the elements of the four facets in the mapping sentence for this study. For the pilot-testing of the instrument, two attitude items were written to represent each structuple, with the ultimate goal of selecting the "best" item of each structuple for the final attitude measurement instrument. Thus two "equivalent" forms of the instrument were developed, with 54 attitude items on each form. In addition, 26 questions were included on the instrument to obtain background, biographic information from the subjects and to request self-reports of personal alcohol consumption. The 26 background and personal

consumption questions were the same for each form. A copy of Form A of the instrument is included as an appendix to this study.

The attitude items in the first section of each instrument were evaluated independently for content and measurement properties by two external judges: one, a behavioral scientist trained in drug abuse, and the other, a psychometrician. Moreover, each judge attempted to identify the structuple for each item for purposes of content validation. The readability of the instrument was evaluated by a health education specialist. The items were subsequently modified based upon comments received from each of the reviewers. Additionally, the order of the attitude items within the first section was randomly determined in an effort to avoid format effects or response biases. The Likert-type response format, with response categories ranging from strongly agree to strongly disagree along a five point scale, was applied to the attitude items.

The second part of the instrument consisted of 13 epidemiological questions concerning frequency and quantity of personal alcohol usage, in addition to location and context of usage. The third part included 13 background questions, such as age, race, sex, etc. The entire instrument consisted of 80 items, and the length of time required to complete the survey was approximately 20 minutes.

Subjects

For the purposes of the present study, data were gathered from a convenience sample (n=234) of college students enrolled in various universities (public and private) in central Texas. There were 102 students who were administered Form A of the instrument and 132 students who took Form B. The subjects ranged in age from 18 to 24 years and included undergraduate freshmen, sophomores, juniors, and seniors. The academic backgrounds of the students were diverse. Although the subjects were drawn from a convenience sample, an attempt was made to include students with various academic, demographic and socioeconomic backgrounds. For example, courses required for most undergraduates (e.g., introductory government and English) or courses popular among a large segment of students (physical and health education) served as the primary sources for selection of the sample.

Hypotheses

The first major hypothesis specified in the mapping sentence was that there were four basic facets underlying college students' attitudes toward alcohol. Secondly, each of these facets was comprised of a hypothesized set of elements. Thirdly, several facets were considered to have naturally ordered elements (i.e., facets A, C, and D). Thus, in theory, these facets with ordered elements could play either axial or modular roles, depending on the degree to which their elements were found to be correlated in the empirical data. But, on an intuitive basis, facet A was expected to be uncorrelated with the other facets because utility and/or damage resulting from drinking alcohol could occur across all elements of the other facets. Therefore, it was predicted to play an axial role. On the other hand, it was thought that facets C and D would be interrelated because facet C represented the *frequency* of drinking alcohol and facet D represented the *quantity* of alcohol consumed. So it was possible that these two facets might be jointly ordered. Finally, facet B consisted of unordered elements and was, therefore, predicted to play a polar role.

Data Analysis

Gamma coefficients of monotonicity (Goodman & Kruskal, 1979) were computed to estimate the pairwise associations among all the attitude items separately for each form of the instrument. The result was two square, symmetric proximity matrices (like intercorrelation matrices). Each of these matrices was submitted to the ALSCAL procedure (Young & Lewyckyj, 1980) within the SAS computer package to perform a classical nonmetric multidimensional scaling analysis. For each computer run, the ALSCAL procedure produced a solution consisting of a set of coordinates to locate each attitude item in several different multidimensional spaces. In consideration of the number of facets specified in the mapping sentence, solutions were requested in two, three, four, and five dimensions. Although there is no exact correspondence between the number of facets and the number of dimensions, it was very unlikely that the four facets could be adequately represented in fewer than two dimensions, but as many as five dimensions might be needed.

RESULTS

Content Validity

Because each item was written to represent one and only one structuple, a rough empirical estimate of content validity was obtained by calculating the percentages of items that were correctly classified (according to their intended structuples) by each of the two independent judges. The results showed that each judge correctly identified 90% or more of the structuples from which the attitude items were initially constructed. Furthermore, of the total of 10 items missclassifed (out of 108 for each judge), five of the items were missclassified by both judges. Thus, interjudge agreement occurred for the vast majority of the items. It should be noted that, prior to administration of the two forms of the instrument, the 10 missclassified items were revised to eliminate ambiguities.

Reliability

The attitude item response data from the administration of both forms of the instrument were analyzed. Each form had 54 items. Internal consistency reliability estimates using coefficient alpha were found to be .92 (n=102) and .90 (n=132) for Forms A and B of the instrument, respectively. There were no students who took both forms, so no estimate of equivalent forms reliability was available.

Construct Validity

The results of the multidimensional scaling analysis were used to investigate the construct validity of the instruments. For both forms, a four-dimensional solution was found to be optimal in terms of interpretability and correspondence with the facets in the mapping sentence. Stress values for both forms were 0.16, and R-Squared values were 0.71 and 0.75 for forms A and B, respectively. Because the four-dimensional solutions were essentially the same for the two forms, only the results from Form A will be presented below.

Facet A, which represented the outcome of a given drinking behavior, was predicted to play an axial role, dividing the MDS solution space into two discrete regions. One region was expected to contain items that represented attitudes toward positive outcomes from drinking (the utility element) and the other region was expected to contain items that represented attitudes toward negative outcomes from drinking (the damage element). Indeed, the

results from the four dimensional solution, in which dimension one was plotted against dimension two, revealed that the actual structure was exa as predicted, with no missclassifications of items in the two distinct regi This structure indicated that students' attitudes clearly distinguished between the damage and utility outcomes of drinking. Figure 1 presents graphic representation of the items as classified by Facet A.

Insert Figure 1 about here.

Facet B was comprised of elements that represented three broad a of life (physical health, mental health and social life). This facet was predicted to play a polar role, in which the solution space would be divid into unordered, "pie slice" regions with a common origin. The solution portraying dimensions two versus four demonstrated that this structure turned out as predicted, with only a few missclassifications. All of the 18 items that represented the element physical health were correctly class 16 of the 18 mental health items were correctly classified, and 14 of the social life items were correctly classified. It appeared that students interpreted items 10, 22, 30, and 47 to be more closely associated with mental health than with social life. Three of these four items pertained consequences to friendships from drinking everyday. Furthermore, the students associated items 3 and 27 more closely with social life than wit mental health. Item 3 referred to drinking everyday to cope with breaki up a romantic relationship, while item 27 referred to having low self-est as a result of drinking 3 or 4 wine coolers once a month. Figure 2 shows graphic representation of the area of life facet.

Insert Figure 2 about here.

The frequency (Facet C) and quantity (Facet D) facets were found t related and jointly played axial roles. They formed what Levy (1981) call duplex. More specifically, attitude items with low frequency, low quantit structuples were positioned in an opposite region of the solution space f the region containing items with high frequency, high quantity structupl The most interpretable representation of the frequency facet was the plo

which dimension one was plotted against dimension two. Within this space, 17 of the 18 items that reflected daily use were correctly classified at one end of the solution space, while 16 of the 18 items that represented monthly use were correctly classified at the opposite end of the solution space. The students perceived items 29 and 38 to be more like the daily use items, and interpreted item 14 to be more like the monthly use items. Items 29 and 38 referred to the outcome to physical health from drinking 5 or 6 beers at one time, and from drinking 3 or 4 shots of liquor at one time, respectively. Item 14 referred to the relaxation effect of having one or two beers every evening. Contrary to what was hypothesized for Facet C, the items that measured attitudes toward weekly use (i.e., the middle element) did not form any distinctive pattern in terms of their locations. This result indicates that students' attitudes only distinguished between daily and monthly drinking, but did not perceive weekly drinking as being in between. Figure 3 presents the results for the frequency facet.

Insert Figure 3 about here.

The solution space that plotted dimension one against dimension three presented the most interpretable representation of the quantity facet (Facet D). Most (16 of 18) of the items reflecting heavy alcohol consumption were correctly classified into one region of the solution space, and most (16 of 18) of the items reflecting light quantities of alcohol consumption were located at the opposite end of the solution space. However, as with Facet C, attitude items reflecting moderate frequency of alcohol consumption (the middle element of Facet D) were not located in between these two extremes. Again, students' attitudes appeared to view quantity of alcohol consumption as either heavy or light with no level of moderate drinking distinguished. Figure 4 shows the quantity facet.

Insert Figure 4 about here.

The duplex structure of Facets C and D was demonstrated for the extreme elements in each of these two facets. However, the weekly

frequency items and the moderate quantity items were dispersed throughout the solution space, seemingly without order or organized structure of any type. These results indicated that the frequency and quantity facets in the mapping sentence should be reevaluated and possibly revised in terms of their elements, at least for the college student population, with implications for item rewriting as well. However, the results of the duplex formed by Facets C and D revealed two interesting points about the attitudes of college students toward alcohol: they perceived frequency of alcohol consumption and quantity consumed as being related and they seemed to view alcohol consumption in a dualistic fashion. They appeared to see drinking as an "all or none" dichotomy without any middle ground.

Overall, in the present research context of attitudes toward alcohol, the facet analysis approach provided considerable evidence for the construct validity of the two forms of the attitude instrument. This evidence was shown through fairly accurate confirmation of the predictions made about the facets and elements of the mapping sentence as manifested through the resulting locations of the attitude items in the multidimensional solution space.

DISCUSSION

In attitude research as well as in other domains, the application of facet theory facilitates both exploratory and confirmatory research designs. The exploratory approach is evidenced by the general lack of agreement among social scientists as to the definitions and structures of attitudes. In attempting to quantify attitudes through the development of measurement instruments, attitude researchers use (a) the results of previous research, (b) their expertise in and knowledge of a content domain, (c) their intuition about the construct of interest, and (d) relevant theories, if they exist, to write attitude items. These attempts represent, more or less, a trial and error process. One advantage of the facet theory approach is that it forces the researcher to systematize the process of instrument development and item writing. Others have noted the utility of mapping sentences for generating items, primarily in the context of criterion-referenced achievement testing applications (Berk, 1978; Blumberg & Felner, 1980; and Millman, 1974).

But constructing a mapping sentence may still be considered an exploratory method, especially if the research area is a new one about which little is known. One must posit hypotheses about facets, their elements, and their interrelationships. In turn, the tentative mapping sentence makes these hypotheses both explicit and testable. The mapping sentence also serves as a template for item writing and pilot instrument construction, which helps to build-in content validity. Subsequent to data collection and analysis, the results supply information about the usefulness of the mapping sentence and, thereby, have direct implications for revisions and reconceptualizations.

At the same time, this very process could be viewed as confirmatory in nature. That is, predictions about the patterns of locations of the items in partitions of the multidimensional solution space are stated *a priori*. Therefore, the degree to which these predictions are accurate provides confirmatory evidence for the conceptualizations expressed in the mapping sentence. In this manner, attention is focused on the construct validation of the measurement instrument. Thus, facet theory via the mapping sentence provides a system by which both the content and construct validity of an instrument can be addressed.

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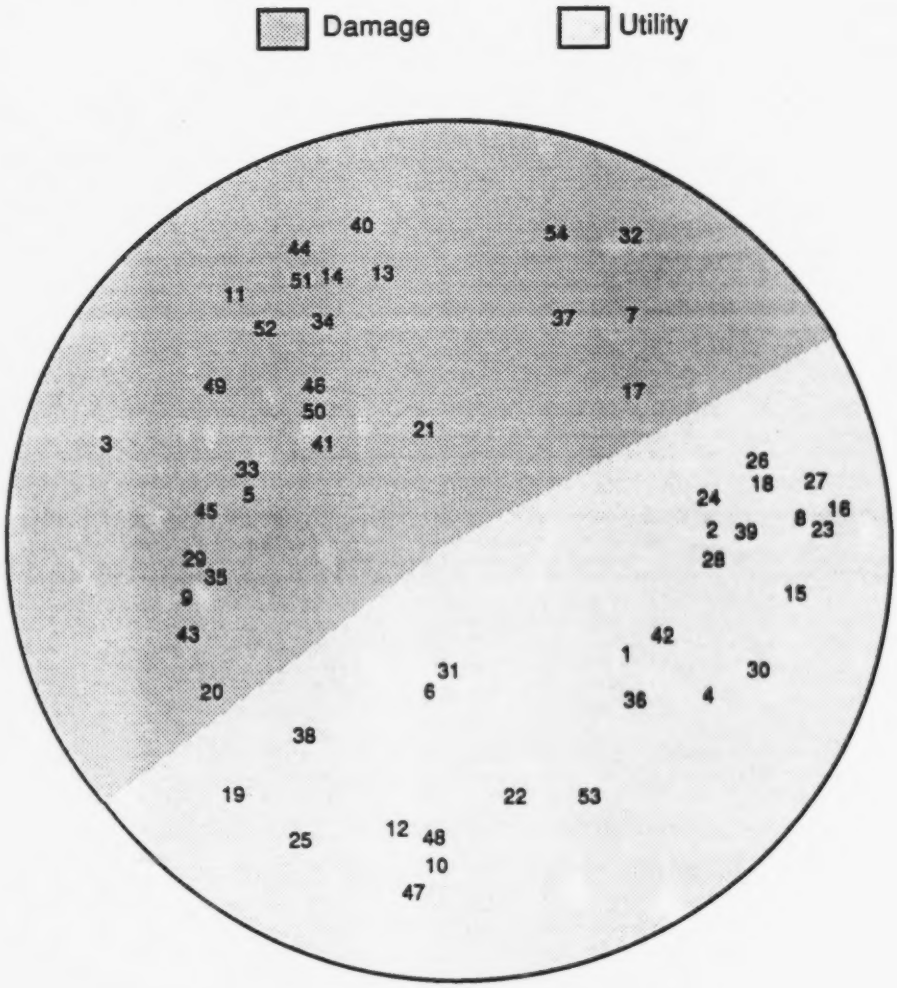


Figure 1. MDS Plot of 54 Attitude Items Illustrating the Elements of Facet A, Damage and Utility.

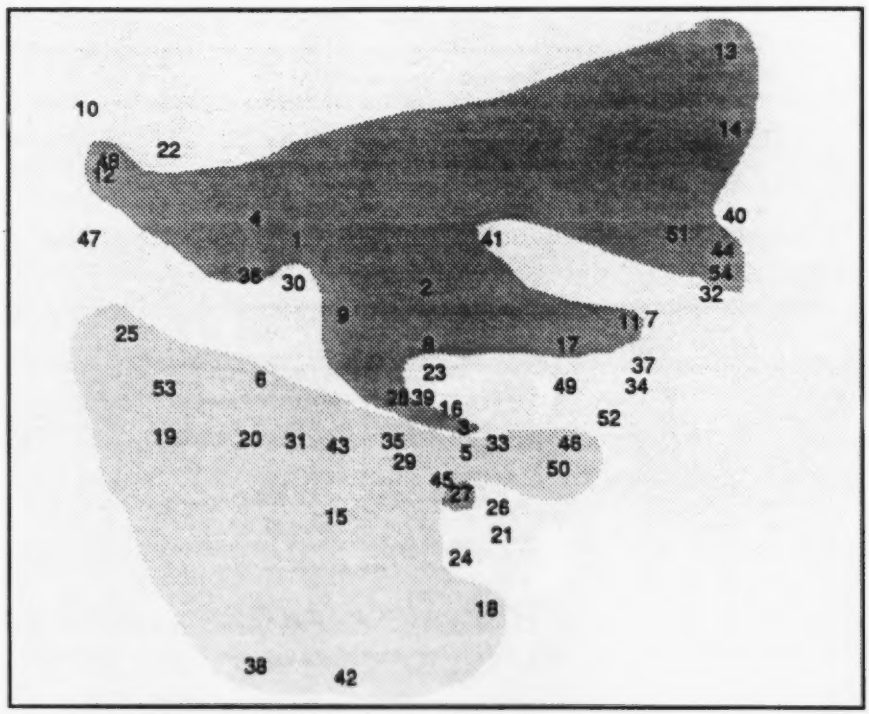


Figure 2. MDS Plot of 54 Attitude Items According to the Area of Life Facet

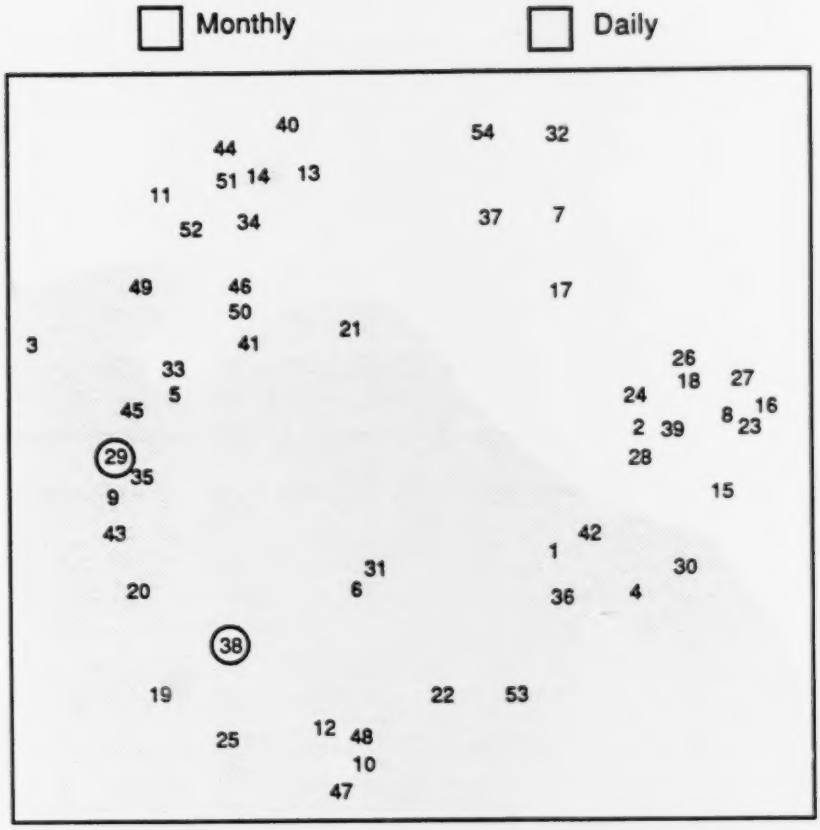


Figure 3. MDS Plot of 54 Attitude Items According to Facet C, Frequency of Use

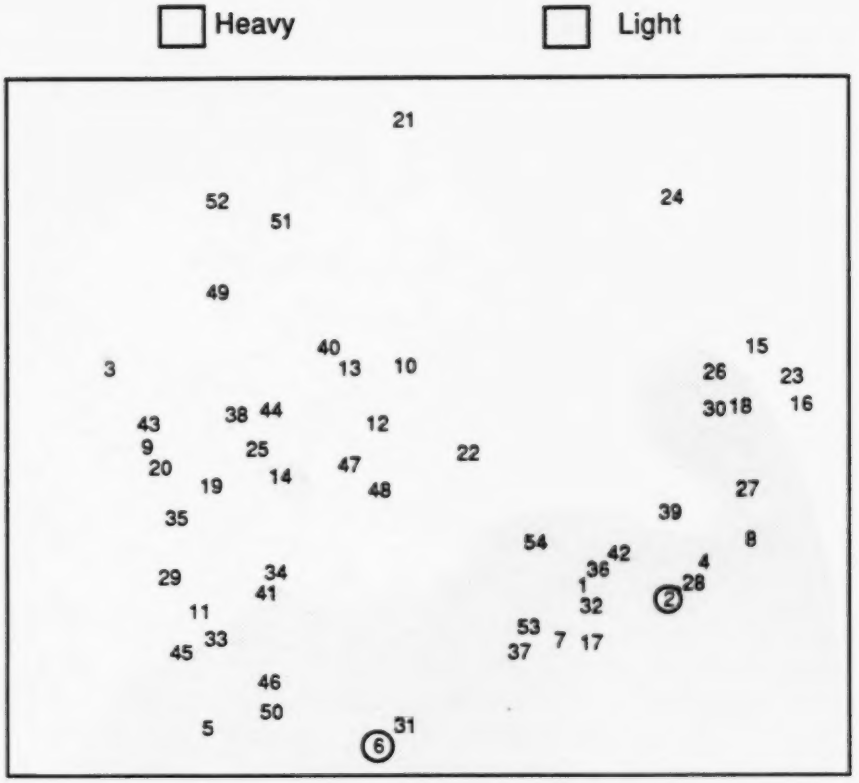


Figure 1. MDS Plot of 54 Attitude Items According to Facet D, Quantity of Use

Final version of Form A

ALCOHOL SURVEY

Instructions

I, Polly Edmundson, am a graduate student at The University of Texas at Austin in the Department of Kinesiology & Health Education. This totally ANONYMOUS survey of college students' attitudes and experiences regarding alcohol use is an important part of my dissertation. Approximately 2000 participants are needed for this survey; you were selected as a possible participant because your opinions are crucial for the study to represent accurately a variety of points of view.

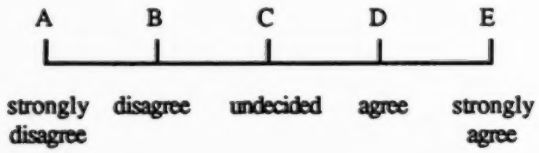
There absolutely is no way that anyone can identify you or connect you with your answers. Furthermore, your participation today is voluntary. If you decide not to participate, rest assured that it will not affect your grade in this class, your relationship with your professor, or your relationship with The University of Texas. However, your opinions are very important, and your participation will make a significant contribution to this project.

To consent and participate all you have to do is respond to the statements on the survey. Please use the orange answer sheet to record your responses. DO NOT PUT YOUR NAME ON EITHER THE SURVEY OR THE ANSWER SHEET. Your honesty in responding to the statements is very important. There are no right or wrong answers.

Before beginning the survey, please indicate on the answer sheet your gender by bubbling in either "male" or "female." Also, in the area on the answer sheet marked "birth date," bubble in only the year of your birth.

If you have any questions at this time, please ask me. If you have any additional questions later, I will be happy to answer them. I can be reached at (512) 471-4405, Belmont Hall 222, The University of Texas at Austin, 78712. Your participation in this project is greatly appreciated.

PART A. The following statements concern your opinions toward alcohol use. To indicate how much you agree or disagree with each of the statements listed below, please use the following scale:



Bubble in your response to each statement on the answer form using this scale for your response. Please be careful to put your response in the appropriate place on the answer sheet. Also, keep in mind that 1 beer contains about the same amount of alcohol as 1 shot of liquor, 1 glass of wine, or 1 wine cooler. The mixed drinks referred to in the items contain 1 shot of liquor (for example, a rum and coke).

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1. People who have one or two beers every day tend to be depressed.

2. Drinking a six pack of beer at one time once a month might make a person feel depressed.

3. It's easier to cope with a relationship break-up by having 5 or 6 drinks every day.

4. Persons who have 5 or 6 glasses of wine about once a week tend to be lonely.

5. Having 3 or 4 drinks during the week should be good for your body.

6. Persons who drink 5 or 6 wine coolers one evening every week are probably hurting their bodies.

7. Having one or two drinks once a week with friends is fun.

8. People who drink one or two shots about once a month seem to be nervous.

9. People who have 3 or 4 drinks every day tend to have a positive outlook on life.

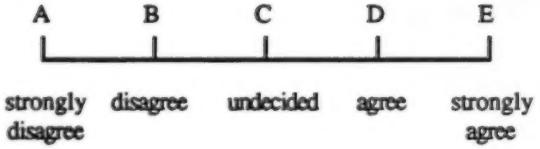
10. Friends who drink 5 or 6 wine coolers every day tend to have problems getting along with others.

11. Drinking 5 or more shots of tequila on Friday night once a month would be a great way to cope with the pressures of school.

12. Drinking a six-pack of beer every day can make a person violent.

INSTRUCTIONS

Please bubble in your response to each item of the survey in the appropriate area of the answer sheet. Please use the scale at the right for your responses to each item.



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13. People seem to feel good about life when they have one or two glasses of wine about once a month.

14. People who have one or two beers every evening seem to be relaxed.

15. People tend to vomit when they drink 5 or 6 wine coolers once a month.

16. The type of person who drinks five or more wine coolers once a month usually has a difficult time making friends.

17. It's okay to relax once a month by drinking 3 or 4 glasses of wine.

18. A person who drinks one or two glasses of champagne occasionally (at a wedding, for example) will probably get physically sick.

19. People who drink about three or four beers every day might expect to have more physical health problems than nondrinkers.

20. Having five or more beers every day should be good for your physical health.

21. People who drink 5 or 6 wine coolers every day tend to be popular on campus.

22. People who have 3 or 4 drinks every day tend to lose their friends.

23. It's hard for someone who drinks 3 or 4 beers during the week to get a date.

24. People who have 3 or 4 drinks once a month are unlikely to be invited to parties.

25. Having 5 or more drinks every day would tend to make a person physically ill.

26. Friendships tend to end when a person has one or two drinks once a month.

27. People sometimes feel badly about themselves when they drink 3 or 4 wine coolers one evening each month.

28. Drinking one or two glasses of rum and coke about once a week can make a person depressed.

29. It's probably physically healthful to have 5 or 6 beers at one time once a month.

INSTRUCTIONS

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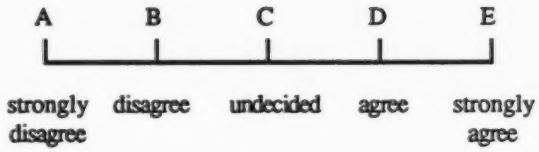


30. Going to movies with friends isn't much fun for a person who drinks one or two beers every day.

31. Physical health is probably harmed by having 3 or 4 drinks once a week.

32. Having a party once a month where persons can drink one or two beers would be a good way to have fun.

33. It's good for your physical health to have 3 or 4 wine coolers once a month.

34. A party is best when it happens about once a month and everyone has 5 or 6 drinks each.

35. Drinking a six-pack of beer or more every Saturday night is probably physically healthy.

36. Persons who drink three or four beers at a party every Saturday night often seem to get irritable.

37. It would be nice to have 3 or 4 glasses of wine with friends about once a month.

38. Having 3 or 4 shots of whiskey at one time once a month could make a person physically sick.

39. Friends who have one or two drinks once a week seem to argue alot.

40. Persons who have 3 or 4 drinks once a week tend to get along well with others at school.

41. It's fun to have one or two drinks with friends every evening.

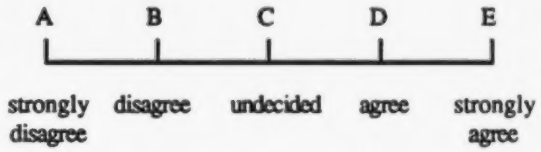
42. People who have one or two glasses of wine one night a week might expect to have a headache the next morning.

43. Physical health should be improved by drinking three or four wine coolers every day.

44. People seem to feel good about themselves when they have 3 or 4 glasses of wine one evening during the week.

INSTRUCTIONS

Please bubble in your response to each item of the survey in the appropriate area of the answer sheet. Please use the scale at the right for your responses to each item.



45. It's probably physically healthy for a person to have one or two glasses of wine every day.

46. It should be physically healthy for a person to have one or two beers about once a week.

47. It's hard for a person who drinks a six-pack of beer one night every week to have a good time at a party where no alcohol is served.

48. Persons who drink 3 or 4 glasses of wine every day tend to be unhappy.

49. Friends tend to get along better with each other when they share three or four beers every night at dinner.

50. Physically, drinking a couple of beers once a month should be beneficial.

51. Persons who drink 5 or more beers every Saturday night seem to get a sense of confidence about themselves.

52. People who have 5 or 6 beers once a week seem to have an easier time getting a date.

53. Having one or two wine coolers every day would probably make a person physically sick.

54. One or two mixed drinks every Friday night helps a person to unwind after a hard week.

PART B. The following questions concern your personal use of alcohol. For each question please bubble in the answer on the answer sheet that best describes your drinking behavior.

55. Have you ever drunk alcohol (beer, wine, liquor, wine coolers)?

A. Yes.

B. No.

If you answered "No", please skip to question 68.

56. In the last year, how often did you drink alcohol?

A. Never.
B. At least once, but not every month.
C. At least once a month, but not every week.
D. At least once a week, but not every day.
E. At least once a day.

57. In the last month, how often did you drink alcohol?

A. Never.
B. At least once, but not every week.
C. About once a week.
D. More than once a week, but not every day.
E. At least once a day.

58. How much alcohol do you usually drink in one sitting? To answer this question, please note that 1 beer contains about the same amount of alcohol as 1 shot of liquor, 1 glass of wine, or 1 wine cooler.

A. The same as 1 beer or less.
B. The same as 2 beers.
C. The same as 3 beers.
D. The same as 4 beers.
E. The same as 5 or more beers.

59. How often do you drink alcohol by yourself?

A. Never.
B. At least once a year, but not every month.
C. At least once a month, but not every week.
D. At least once a week, but not every day.
E. At least once a day.

60. How often do you drink alcohol with close friends?

A. Never.
B. At least once a year, but not every month.
C. At least once a month, but not every week.
D. At least once a week, but not every day.
E. At least once a day.

61. How often do you drink alcohol in the morning?

A. Never.
B. At least once a year but not every month.
C. At least once a month, but not every week.
D. At least once a week, but not every day.
E. At least once a day.

62. How often do you drink alcohol while driving a car?

A. Never.
B. At least once a year, but not every month.
C. At least once a month, but not every week.
D. At least once a week, but not every day.
E. At least once a day.

63 How often do you drink alcohol while a passenger in a car?

A. Never.
B. At least once a year, but not every month.
C. At least once a month, but not every week.
D. At least once a week, but not every day.
E. At least once a day.

64. How often do you drink alcohol prior to going to class?

A. Never.
B. At least once a year, but not every month.
C. At least once a month, but not every week.
D. At least once a week, but not every day.
E. At least once a day.

65. How often do you drink alcohol at your college residence?

A. Never.
B. At least once a year, but not every month.
C. At least once a month, but not every week.
D. At least once a week, but not every day.
E. At least once a day.

66. How often do you drink alcohol at another person's residence?

A. Never.
B. At least once a year, but not every month.
C. At least once a month, but not every week.
D. At least once a week, but not every day.
E. At least once a day.

67. How often do you drink alcohol before going to social events (movies, concerts, sports events)?

A. Never.
B. At least once a year, but not every month.
C. At least once a month, but not every week.
D. At least once a week, but not every day.
E. At least once a day.

PART C. The following questions concern general information about you. For each of the following items, please bubble in the answer on the form that best describes you.

68. Your race:

A. Asian/Oriental
B. Black
C. White-Caucasian
D. Hispanic
E. Other

69. Your parents' income per year:

A. Less than $15,000
B. $15,001 to $35,000
C. $35,001 to $55,000
D. $55,001 to $75,000
E. More than $75,000

70. How often do you attend religious services?

A. Never
B. Infrequently
C. Occasionally
D. Frequently
E. Very frequently

71. How would you describe the occupation of your parent who supported your family household?

A. Blue collar/industrial.
B. Military.
C. Professional.
D. White collar/management.
E. Other.

72. What is the highest level of education achieved by either of your parents?

A. No school.
B. Grammar school.
C. High school.
D. College.
E. Graduate school.

73. How would you characterize the alcohol drinking habits of your father?

A. Non-drinker.
B. Light drinker.
C. Moderate drinker.
D. Heavy drinker.
E. Don't know.

74. How would you characterize the alcohol drinking habits of your mother?

A. Non-drinker.
B. Light drinker.
C. Moderate drinker.
D. Heavy drinker.
E. Don't know.

75. Compared to the other students who go to college, how would you rate your overall academic ability?

A. Poor.
B. Fair.
C. Good.
D. Excellent.

76. How religious are you?

A. Very nonreligious
B. Nonreligious
C. Undecided
D. Religious
E. Very religious

77. On the whole, how successful do you feel your life has been up to this point?

A. Very unsuccessful
B. Unsuccessful
C. Average
D. Successful
E. Very successful

78. How frequently do you use other drugs besides alcohol and tobacco?

A. Never
B. Infrequently.
C. Occasionally.
D. Frequently.
E. Very frequently.

79. On the whole, how physically attractive do you feel you are?

A. Very unattractive
B. Unattractive
C. Average
D. Attractive
E. Very attractive

Thank you very much for participating in this survey!